REMEDIAL ACTION PLAN

Former Honey Lake Demolition Range - East Shore Area
Sierra Army Depot
Lassen County, California

June 2004

Final

California Environmental Protection Agency
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento California, 95826

Executive Summary

This Remedial Action Plan (RAP) represents the selected ordnance and explosives (OE) response actions for the East Shore Area of the former Honey Lake Demolition Range, Sierra Army Depot, Lassen County, California. The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has developed this RAP in accordance with Chapter 6.8 of the California Health and Safety Code and consistent with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, and the National Contingency Plan. This decision document has been prepared based on the administrative records developed for the East Shore Area project site including the *Draft Final Volume I Engineering Evaluation/Cost Analysis, Former Honey Lake Demolition Range – East Shore Area, Sierra Army Depot, Lassen County, California*, dated March 2004. The Department of Toxic Substances Control approves the Subsurface Clearance using Handheld Geophysical Equipment and Institutional Controls, as the most appropriate final remedy for the East Shore Area at Sierra Army Depot.

The East Shore Area project is situated at the northwest corner of Sierra Army Depot, in Herlong, Lassen County, California. It consists of the portions of the East Shore Parcel, the Off-Site Parcel, the Airfield Parcel, and the Cross-Depot Access Road Parcel which are situated within the kick-out boundary of the former Honey Lake Demolition Range. The East Shore Area is divided into five sectors:

- Airfield Sector (243 acres)
- East Shore Sector (618 acres)
- Off-Site Sector (514 acres)
- Pole Line Road Sector (68 acres)
- Function Test Range Sector (122 acres)

The level of OE hazard on the East Shore Area was evaluated during three separate phases of field investigations consisting of geophysical mapping OE sampling. Based on this investigation, the following levels of risk were assigned to each sector:

- Airfield Sector: Low OE risk. No OE recovered during investigation.
- East Shore Sector: High OE risk. Three OE items were recovered during investigation.
- Off-Site Sector: Low OE risk. No OE recovered during investigation.
- Pole Line Road Sector: Low OE risk. No OE recovered during investigation.
- Function Test Range Sector: High OE risk. 114 OE items were recovered during investigation.

The proposed future land use for each of the sectors is as follows:

- Airfield Sector – Industrial
- East Shore Sector – Open Space
- Off-Site Sector – Open Space and Grazing
- Pole Line Road Sector – Developed Infrastructure (Industrial)
- Function Test Range Sector – Open Space

Four alternatives were evaluated to mitigate the OE hazards for the East Shore Area:

1. No Action
2. Institutional Controls
3. Surface Clearance of OE with Institutional Controls
4. Subsurface Clearance of OE with Institutional Controls

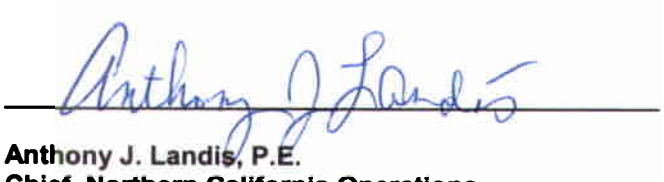
Regulatory agency acceptance of the proposed alternative has been discussed and evaluated in the preparation of this document. A 30-day public review and comment period was conducted from March 9, 2004 to April 8, 2004 for the supporting *Draft Final Volume I Engineering Evaluation/Cost Analysis, Former Honey Lake Demolition Range – East Shore Area, Sierra Army Depot, Lassen County, California*, dated March 2004, prepared by Earth Tech, Incorporated.

Documents describing the environmental conditions and previous investigations of the Honey Lake area are available for public review in the information repositories located at Sierra Army Depot, the Susanville Public Library, the Reno Public Library, and at the DTSC Sacramento Field Office.

Based on the potential for OE risk, the proposed future land use, and future public accessibility, Alternative 4 - Subsurface Clearance of OE with Institutional Controls, is selected as the preferred alternative for approximately 983 acres of the East Shore Area. The 983 acres consists of the portions of the on-base parcels which lie within the kickout zone for the Former Honey Lake Demolition Range (see figure 2, page 11). Subsurface Clearance of OE will utilize handheld geophysical equipment. The performance goal for the remedy is removal of OE and OE scrap, of a size 20-mm or larger, from the surface and subsurface, to a minimum depth of 12 inches below ground surface. Quality Control and Quality Assurance measures will be implemented to ensure performance standards are met. Although this remedy is expected to be highly effective, there is no certainty that all OE hazards will be removed from the property. Therefore, Institutional Controls, in the form of a Land Use Covenant, will restrict certain future land uses, based on the findings of the removal action conducted by the U.S. Army, to limit potential exposure to OE.

APPROVAL

Remedial Action Plan, Former Honey Lake Demolition Range – East Shore Area, Sierra Army Depot, Lassen County, California



6-10-04

Anthony J. Landis, P.E.
Chief, Northern California Operations
Office of Military Facilities
Site Mitigation and Brownfields Reuse Program
Department of Toxic Substances Control

Date

Remedial Action Plan

East Shore Area
Former Honey Lake Demolition Range
Sierra Army Depot
Lassen County, California

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 SITE BACKGROUND

Site Location and Background. The East Shore Area project site is situated at the northwest corner of the Sierra Army Depot (SIAD) in the Honey Lake area of Lassen County, California, and is approximately 40 miles southeast of Susanville, California, and approximately 55 miles northwest of Reno, Nevada (Figure 1).

The East Shore Area is composed of private property (the Off-site sector, 514 acres), and portions of two adjoining Base Realignment and Closure (BRAC) parcels: 243 acres of the Airfield BRAC Parcel (2,285 acres) which includes the Amedee Airfield, and approximately 740 acres of the East Shore BRAC Parcel (971 acres). These two BRAC parcels were identified as excess property and designated for disposal and reuse by the 1995 BRAC Commission in conformance with the BRAC Act of 1990 (U.S. Army Corps of Engineers, 1998). The East Shore Area consists of only those areas situated within the kick-out boundary of the Former Honey Lake Demolition Range. The OE-Clean portions of the East Shore Parcel and the Airfield Parcel have previously been transferred to Lassen County.

Site History. In 1941, the Army selected land east of Honey Lake as the site where the Sierra Ordnance Depot would be established. Construction of the depot began in 1942. In 1944, the parcel containing Honey Lake was transferred to the depot. The Sierra Ordnance Depot was later renamed the Sierra Army Depot. Sierra Army Depot conducted demolition and burning of excess, unserviceable, and/or obsolete munitions following WW II. The first documented demolition activity occurred in 1945 on the dry lake bed of Honey Lake. Use of the Honey Lake Demolition Range for demolition and burning continued through the 1950s.

A munitions test site, commonly referred to as the function test range, was established on the early 1950s beyond the eastern high-water shoreline of Honey Lake. Flares, grenades, mines, and small arms were test fired and/or detonated at the range to measure their performance characteristics.

The Depot histories in the Archives Search Report indicate that a variety of ordnance items (including 20-milimeter [mm], 37 mm, 75 mm, 105 mm, and 155 mm projectiles; 60mm and 81 mm mortars; 2.36-inch and 4.5-inch rockets; hand grenades; small arms; flares; antipersonnel and antitank mines; cluster bombs; 250-pound [lb], 500-lb, and 2,000-lb bombs; and others) were stored at the Depot and/or destroyed at the former Honey Lake Demolition Range and tested at the former Function Test Range.

Current Site Conditions. An Engineering Evaluation and Cost Analysis (EE/CA) was conducted for the East Shore Area to collect data to support the evaluation of ordnance risk and develop appropriate OE response actions for the project site. As a result of three EE/CA field investigations conducted at the East

Shore Area (Earth Tech, March 2004), current site conditions within each sector at the East Shore Area consist of the following:

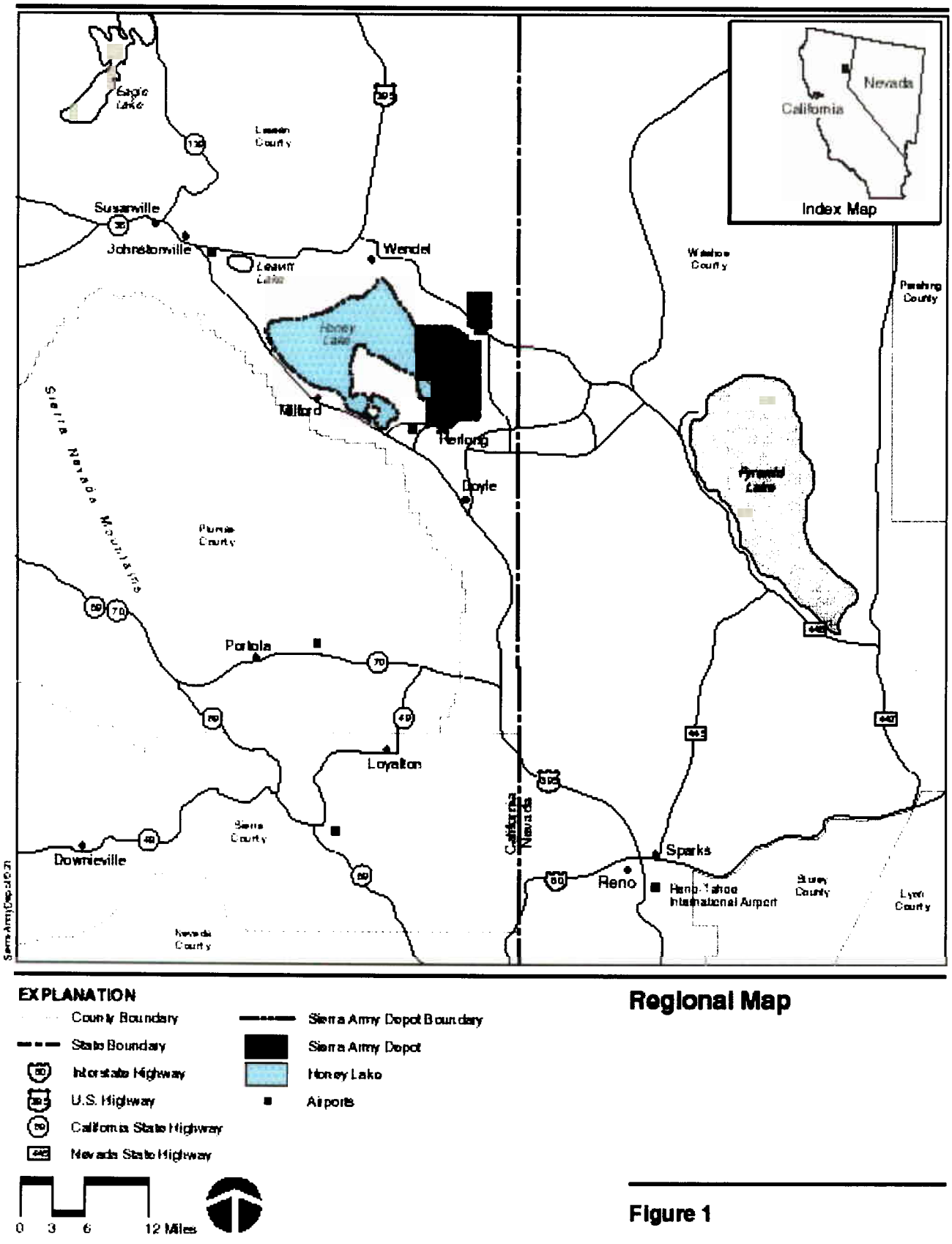
- **Airfield Sector:** There were no OE (hazardous) items recovered during the investigation of this sector. Therefore, there is a low risk to OE in this area.

- **East Shore Sector:** Three OE items were recovered during the investigation of this sector. Therefore, there is a high risk to OE in this area.

- **Off-Site Sector:** There were no OE (hazardous) items recovered during the investigation of this sector. Therefore, there is a low risk to OE in this area.

- **Pole Line Road Sector:** 100 percent of this area was investigated and all but 7 anomalies were reacquired and dug. No OE (hazardous) items were recovered during the investigation of this area. Therefore, there is a low risk to OE in this area.

- **Function Test Range Sector:** 100-percent of this area was investigated. Most of the identified anomalies were reacquired and dug for all but a 10-acre area. Outside the 10-acre area, 341 anomalies were not reacquired or dug. Therefore, there is a high risk to OE in this area.



Regional Map

Figure 1

2.0 PREVIOUS INVESTIGATIONS

Three phases of field investigation were conducted to characterize the Ordnance and Explosive (OE) hazard risk for the East Shore Area. The results of these investigations are detailed in the *Draft Final Former Honey Lake Demolition Range – East Shore Area Volume I EE/CA*, dated March 2004, prepared by Earth Tech, Incorporated. For investigation and data management purposes, the project site was divided into sectors based on past military usage, current and future land uses (using information from the *Revised Lassen County General Plan* and the Sierra Army Depot Reuse Plan, land ownership or administration, and/or prominent geographic features, that would enable field personnel to identify specific sector boundaries in the field. The characterization of the East Shore Area consisted of the following activities conducted during various time periods from February 1999 to September 2003: surface clearance of the path of the geophysics equipment, geophysical mapping, anomaly investigation, and intrusive OE sampling. A combined total of approximately 366 acres were investigated for OE during the Phase I (112 acres), Phase II (197 acres), and Phase III (57 acres) EE/CA field investigations.

As a result of the three EE/CA field investigations, 117 OE (hazardous) items and 14,422 OE Scrap (inert and non-hazardous) items were recovered (shown on figure 2). Ninety-four (81 percent) of the 117 OE items were recovered on the surface. One OE (hazardous) item was recovered from a small disposal pit at a depth of 24 inches below ground surface (bgs). A total of 11,681 (81 percent) of the 14,422 OE scrap items were recovered between 0 and 6 inches bgs. OE scrap was recovered at depths up to 48 inches bgs. Although OE scrap is inert, it does indicate the potential for OE. Specific details regarding the approach and results of the EE/CA field investigations are provided in the EE/CA report.

3.0 SUMMARY OF REMOVAL ACTIONS

No Removal Actions have been conducted to date for the East Shore Area. During the three investigation phases, anomalies were intrusively investigated and removed.

4.0 SUMMARY OF SITE RISKS

The results of the Phase I, Phase II, and Phase III Engineering Evaluation and Cost Analysis (EE/CA) field investigations indicated that Ordnance and Explosives are present within the East Shore Area, affecting both human safety and the environment and public interest. In most areas at the East Shore Area where ordnance was recovered, the public will have open access, and there are no effective physical or administrative controls to ensure their safety from potential exposure to OE.

As a result of the EE/CA field investigations the following risks were assigned to each sector at the East Shore Area:

- **Airfield Sector:** There were no OE (hazardous) items recovered during the investigation of this sector. Therefore, there is a low risk to OE in this area.

- **East Shore Sector:** Three OE items were recovered during the investigation of this sector. Therefore, there is a high risk to OE in this area.

- **Off-Site Sector:** There were no OE (hazardous) items recovered during the investigation of this sector. Therefore, there is a low risk to OE in this area.

- **Pole Line Road Sector:** 100 percent of this area was investigated and all but 7 anomalies were reacquired and dug. No OE (hazardous) items were recovered during the investigation of this area. Therefore, there is a low risk to OE in this area.

- **Function Test Range Sector:** 100-percent of this area was investigated. Most of the identified anomalies were reacquired and dug for all but a 10-acre area. Outside the 10-acre area, 346 anomalies were not reacquired or dug. Therefore, there is a high risk to OE in this area.

5.0 SUMMARY AND EVALUATION OF ALTERNATIVES

5.1 Evaluation Criteria

Each of the OE response action alternatives was evaluated against the following criteria. These criteria are discussed in greater detail in Chapter 7.0 of the EE/CA Report. The evaluation of each of these criteria can be found in Chapter 8.0 of the EE/CA Report.

Effectiveness. Effectiveness is a measure of an OE response action's ability to reduce the potential for exposure to or interaction with OE. Effectiveness takes into account the protection of human safety, compliance with applicable or relevant and appropriate requirements (ARARs), and both long- and short-term effectiveness.

Implementability. Implementability is a measure of whether an OE response action can be physically and administratively conducted. Implementability takes into account both technical and administrative feasibility, availability of services and materials, and local agency and community acceptance.

Cost. Cost is a measure of the actual dollar value of each OE response action alternative, the investment value, and its corresponding benefit.

5.2 Alternatives Considered

The evaluation analyzed the effectiveness, implementability, and cost of each of the following alternatives.

OE Response Action Alternative 1 - No DOD Action Indicated (NDAI). Institutional Controls, Surface Clearance of OE, and Subsurface Clearance of OE to Depth would not occur under this alternative. However, NDAI indicates that the Formerly Used Defense Sites (FUDS) program will review any new information regarding Department of Defense (DOD) activities as it becomes available. If OE is discovered in the future, the Army will reconsider the status of the property. NDAI is indicative of a determination that is open to further and future review of an area. DTSC does not consider a No Action remedy to be protective of human health and the environment.

OE Response Action Alternative 2 - Institutional Controls. Institutional Controls protect property owners and the public from hazards present at a site by warning of the OE hazard and/or limiting the access or use of a site. Institutional Controls include the use of engineering controls, educational programs, legal mechanisms, and construction support. The overall effectiveness of Institutional Controls depends entirely on local agencies and private landowner support, involvement, and willingness to enforce and maintain Institutional Controls implemented to eliminate public interaction with OE. DTSC does not consider

institutional controls, by themselves, protective of human health and the environment.

OE Response Action Alternative 3 - Surface Clearance of OE and Institutional Controls. This OE response action alternative includes the location and removal of ordnance from the ground surface. For surface clearance, teams of UXO-qualified personnel use visual identification to search for and remove OE from the ground surface within a specified area. DTSC does not consider surface clearance and institutional controls alone to be protective of human health and the environment. Nearly all hazardous OE detected was on the surface or in the shallow subsurface. It is DTSC's position that a surface clearance remedy would require perimeter fencing and posted warnings with associated long-term operations and maintenance and institutional controls to be protective.

OE Response Action Alternative 4 - Subsurface Clearance of OE to Depth Using Hand-Held Geophysical Equipment and Institutional Controls. This OE response action alternative includes the subsurface detection (using hand-held geophysical instrumentation), excavation, and removal of all detectable OE items within a specified area, commonly referred to as a "mag and flag" response. No single technology available is capable of detecting and removing 100 percent of all OE hazards. Institutional Controls, in the form of a Land Use Covenant, will be implemented to limit or restrict certain future land uses to protect sensitive receptors from exposure to potential OE. One goal of this alternative is to maximize future land use.

A more detailed description of the four OE response action alternatives can be found in Chapter 7.0 of the Draft Final EE/CA Report (Earth Tech, March 2004).

6.0 DECLARATION

This Remedial Action Plan (RAP) for the Former Honey Lake Demolition Range – East Shore Area presents the preferred response actions that will be chosen in accordance with the Comprehensive Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and Chapter 6.8 of the California Health and Safety Code. This RAP explains the factual basis for selecting the response actions for Ordnance and Explosive contamination at the Former Honey Lake Demolition Range – East Shore Area. The information supporting the preferred response action is contained in environmental documents available at the information repositories.

Section 25356.1(e) of the California Health and Safety Code requires that a RAP approved by DTSC include a non-binding preliminary allocation of financial responsibility among all identifiable potentially responsible parties. Upon consideration of all of the evidence, DTSC has concluded that the preliminary non-binding allocation of financial responsibility for this RAP is as follows:

United States Army, Sierra Army Depot: 100%

The content of this RAP is based on recommendations in the U.S. Environmental Protection Agency's Interim Final Guidance on Preparing Superfund Decision Documents (EPA, 1986), and DTSC Policy and Procedure EO-95-007-PP.

7.0 SELECTED REMEDY

The recommendations for the East Shore Area were developed to provide the most effective protection to the public from OE. The recommendations were based on numerous data, including past, current, and future land use; the quantity and location of OE and OE scrap recovered during the Phase I, Phase II, and Phase III EE/CA field investigations and during previous investigations; and the results of the qualitative risk analysis presented in Chapter 4.0 of the EE/CA Report. These recommendations were also based on a detailed evaluation that takes into account the effectiveness, implementability (including local agency and community acceptance), and cost of each OE response action alternative, as presented in Chapter 8.0 of the Draft Final EE/CA Report (Earth Tech, March 2004).

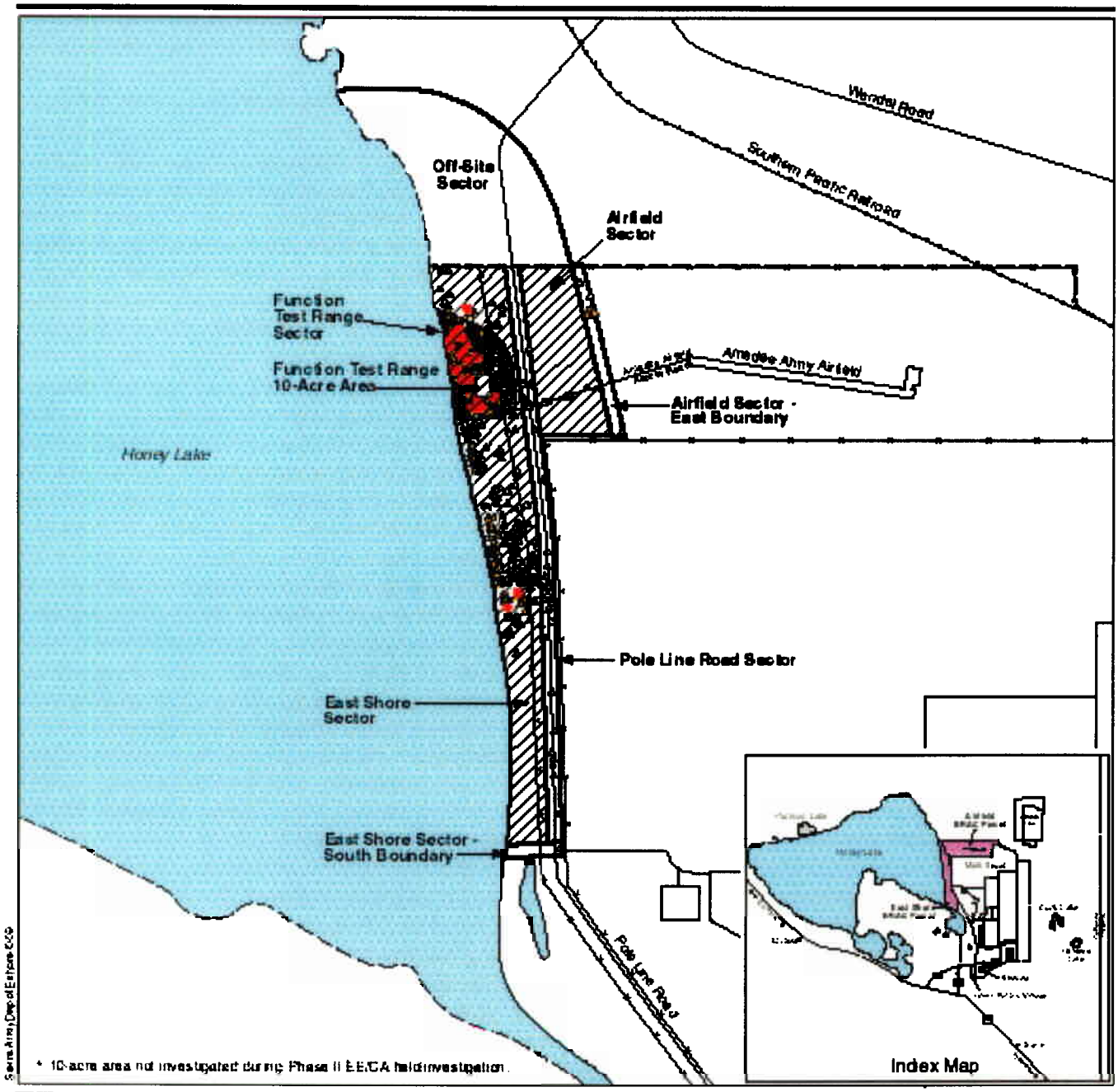
Costs for the OE response actions to be implemented at the East Shore Area were developed in the EE/CA Report. Detailed costing backup can be found in Appendix J of the EE/CA Report.

Implementation of this RAP will result in the excavation of hazardous OE and transportation off-site for disposal. In the event a hazardous OE item is discovered that is unsafe to move, it will be treated by open detonation (a.k.a., blown-in-place) under the authority of the Final Remedial Action Plan for Treatment of Investigation Derived Wastes at the Former Honey Lake Demolition Area, Sierra Army Depot (DTSC, July 2003). On-site treatment, with the exception of emergency blow-in place for items unsafe to move, is not permitted.

7.1 RECOMMENDATIONS FOR INDIVIDUAL SITES

The Draft Final EE/CA Report (Earth Tech, March 2004) identified a Subsurface Clearance of OE to Depth Utilizing Hand-Held (e.g., Mine Lab 2 Explorer) Geophysical Equipment (Alternative 4) as the most appropriate OE response action for the East Shore Area. This action is in direct compliance with Department of Defense (DOD) Safety Standards Chapter 12, DOD 6055.9 STD (Draft Revision dated 03 December 2003). The Subsurface Clearance to Depth will be conducted over 983 acres of the East Shore Area and will consist of the removal and disposal of all OE and OE-related scrap items, of size 20mm or larger, from the surface and subsurface, to a minimum depth of 12 inches bgs.

Figure 2 shows the OE response actions that will be implemented for each sector at the East Shore Area. A description of these OE response actions is provided in detail in the following sections. Table 1 provides a summary of the OE response actions that will be implemented for each sector at the East Shore Area. Detailed cost assumptions and cost backup are provided in Appendix J of the Draft Final EE/CA Report (Earth Tech, March 2004).



EXPLANATION

- Airfield Sector (243 acres)
- East Shore Sector (618 acres)
- Off Site Sector (514 acres)
- Pole Line Road Sector (66 acres)
- Function Test Range Sector (122 acres)
- Sector Boundary
- Sierra Army Depot Boundary
- Subsurface Clearance of OE to Depth Utilizing Hand-Held Geophysical Equipment
- Ordnance and Explosives (OE) recovered during EE/CA field investigations
- OE scrap recovered during EE/CA field investigations
- Existing Fencing

0 .25 .5 1 Mile

Note: Warning signs presently exist along west boundary of Former Honey Lake Demolition Range

OE Response Actions

Figure 2

Table 1. Estimated Costs for OE Response Actions

OE Response Area	Total Acreage	Total OE	Total OE Scrap	OE Response Action	Estimated Cost
Airfield Sector	243	0	17	Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment (as outlined in Section 7.1.1)[a]	$568,656[b]
East Shore Sector	618	3	251	Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment and (as outlined in Section 7.1.2)[a]	$1,441,794[c]
Off-Site Sector	514	0	0	Institutional Controls only (maintain existing zoning as outlined in Section 7.1.3)[a]	--
Function Test Range Sector (Excluding 10-Acre Area)	112	114	14,102	Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment (as outlined in Section 7.1.4)[a]	$261,296[d]
Function Test Range 10-Acre Area	10	--[e]	--[e]	Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment (as outlined in Section 7.1.5)[a]	$23,330[f]
Pole Line Road Sector	68	0	52	Institutional Controls only (as outlined in Section 7.1.6)[a]	--
East Shore Area (project site)	--	--	--	Institutional Controls are recommended for the entire East Shore Area, consisting of the development of a Land Use Covenant. These controls are intended to restrict future use of the property from sensitive uses. One time costs associated with conducting a Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment	$182,000[g]
Total	**1,565**	**117**	**14,422**		**$2,478,812**

Notes:
(a) The Subsurface Clearance to Depth will consist of the removal and disposal of all OE and OE-related scrap items, of size 20 millimeter or larger, from the surface and subsurface, to a minimum depth of 12 inches below ground surface.
(b) Cost consist of a subsurface clearance over 243 acres at a cost of $2,333 per acre.
(c) Cost consist of a subsurface clearance over 618 acres at a cost of $2,333 per acre.
(d) Cost consist of a subsurface clearance over 112 acres at a cost of $2,333 per acre.
(e) The 10-acre area was not investigated during the EE/CA.
(f) Cost consist of a subsurface clearance over 10 acres at a cost of $2,333 per acre.
(g) The one-time cost of $182,000 is required to implement the recommended Subsurface Clearance of OE to Depth. This one-time cost would include project planning, the preparation of a Project Work Plan, personnel mobilization and demobilization, site set-up, and the preparation of a Final Report.
OE = ordnance and explosives

Source: Draft Final Engineering Evaluation/Cost Analysis Former HoneyLake Demolition Range – East Shore Area, Sierra Army Depot, Lassen County, California

7.1.1 Airfield Sector

Subsurface Clearance of OE to Depth Utilizing Hand-Held Geophysical Equipment and Institutional Controls is recommended for the Airfield Sector (see Figure 2 and Table 1).

Recommendations for the Airfield Sector are based upon the following:

- OE sampling in this sector was exploratory (approximately 15 percent of the sector was geophysically mapped during the Phase I and Phase II EE/CA field investigations, and the area adjacent to the east edge of the sector was investigated during the Phase III EE/CA field investigation) to assess whether any munitions are present as a result of past military activities.

- Seventeen OE scrap items were recovered during the three EE/CA field investigations (based on Phase II EE/CA sector boundaries); therefore, there is a potential for OE in this area.

- There were no OE (hazardous) items recovered within the Airfield Sector during any of the three EE/CA field investigations (see Figure 2); therefore, no additional fencing has been recommended for this sector.

- The proposed future land use for this sector is identified as industrial. A large portion of this sector lies within the clear zone for the Amedee Army Airfield and activity such as the maintenance of navigational aides are anticipated. The potential for future commercial/industrial development of this sector should be maximized.

Therefore, a Subsurface Clearance to Depth and Institution Controls is recommended for this sector to reduce the risk associated with the activities that may occur with future sector land use.

The estimated cost to implement a Subsurface Clearance to Depth and Institutional Controls over the Airfield Sector is $568,656 (see Table 1). Compliance with federal and state environmental laws is not anticipated to affect implementation of these recommendations. Therefore, no additional costs for environmental compliance have been provided.

7.1.2 East Shore Sector

Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment and Institutional Controls is recommended for the East Shore Sector (see Figure 2 and Table 1).

Recommendations for the East Shore Sector are based upon the following:

- OE sampling in this sector was exploratory (approximately 7 percent of the sector was geophysically mapped during the Phase I EE/CA field investigation, and the area adjacent to the south edge of the sector was investigated during the Phase III EE/CA field investigation) to assess whether any munitions are present as a result of past military activities at the Former Honey Lake Demolition Range and/or the Function Test Range.

- Three OE items (one land mine fuze, 1 M1 anti-tank land mine [HE-unfuzed], and 1 60mm mortar [HE]) and 251 OE scrap items were recovered during the EE/CA field investigations. The three OE items recovered are all considered sensitive (see Chapter 3.0 of the EE/CA Report) and could be detonated with moderate effort (e.g., dropping the item, striking it, driving over it, or exposing it to extreme heat). The land mine fuze, if detonated, would likely cause minor injury, while the M1 anti-tank land mine (HE) and the 60mm mortar (HE) would likely cause fatal injury if detonated. None of these OE items were recovered east of the existing fence line (see Figure 2); therefore, no additional fencing has been recommended for this sector.

- There is no anticipated change in land use for this area; therefore, access to this sector is anticipated to be minimal. However, it will be easier for the public to access this area following property transfer from the U.S. Army to Lassen County.

The estimated cost to implement a Subsurface Clearance to Depth and Institutional Controls over the East Shore Sector is $1,441,794 (see Table 1). This estimate does not include costs associated with compliance with federal and state environmental laws, such as those associated with wetlands mitigation, endangered/sensitive species relocation, and revegetation of areas following surface clearance activities in specified areas.

7.1.3 Off-Site Sector

Although neither DTSC nor the Army can impose land use restrictions (Institutional Controls) on private property, DTSC recommends Lassen County maintain existing land use zoning of Agricultural Extensive/Public Safety as designated in the Wendel Area Plan for the Off-Site Sector (see Figure 2 and Table 1). This decision is based upon the following:

- OE sampling in this sector was exploratory (approximately 7 percent of the sector was geophysically mapped) to assess if any ordnance was present as a result of past military activities at the Former Honey Lake Demolition Range and/or the Function Test Range.

- There were no OE or OE scrap items recovered in this sector (see Figure 2) during the Phase I EE/CA field investigation; therefore, very little benefit would be gained by conducting an extensive clearance action in an area with no evidence of OE.

- A visual surface search over the south region of this sector during the Phase II EE/CA field investigation failed to identify any OE or OE scrap.

7.1.4 Function Test Range Sector

Subsurface Clearance to Depth Utilizing Hand-Held Geophysical Equipment and Institutional Controls is recommended for the Function Test Range Sector (see Figure 2 and Table 1). This decision for the Function Test Range Sector is based upon the following:

- Although a 100-percent investigation was conducted throughout this sector (114 OE [hazardous] items and 14,102 OE scrap items were recovered), 346 anomalies identified during the Phase II fieldwork were not investigated (their locations, marked by clay pigeons, were compromised, destroyed, or moved) and quality assurance inspections were not conducted by the USACE; therefore, this sector cannot be considered clear of OE.

OE warning signs have not been recommended for the Function Test Range Sector because warning signs are presently in place west of the function test range on the dry lake area region of the former demolition range.

The estimated cost to implement a Subsurface Clearance to Depth and Institutional Controls over the Function Test Range Sector is $261,296 (see Table 1). Compliance with federal and state environmental laws is not anticipated to impact implementation of these recommendations. Therefore, no additional costs for environmental compliance have been provided.

7.1.5 Function Test Range 10-Acre Area

Subsurface Clearance of OE to Depth and Institutional Controls is recommended for the 10-acre area within the Function Test Range Sector that was not investigated during the EE/CA (see Figure 2 and Table 1).

Recommendations for the 10-acre area of the Function Test Range Sector are based upon the following:

- A 100-percent investigation of all identified anomalies was conducted immediately adjacent to this 10-acre area within the Function Test

Range Sector recovering 114 OE (hazardous) items and 14,102 OE scrap (nonhazardous) items; therefore, the potential for OE in this 10-acre area is high.

- With the scheduled transfer of the property from the U.S. Army to Lassen County (expected during fiscal year 2004), the public will have undeterred access into this area, thereby increasing the chance for an OE incident in this area.

OE warning signs have not been recommended for the 10-acre area within the Function Test Range Sector because warning signs are presently in place west of the function test range on the dry lake area region of the former demolition range.

The estimated cost to implement a Subsurface Clearance to Depth over the 10-acre area of the Function Test Range Sector is $23,330 (see Table 1). Compliance with federal and state environmental laws is not anticipated to impact implementation of these recommendations. Therefore, no additional costs for environmental compliance have been provided.

7.1.6 Pole Line Road Sector

Institutional Controls is the recommendation for the Pole Line Road Sector (see Figure 2 and Table 1). The recommendation for the Pole Line Road Sector is based upon the following:

- A 100-percent investigation of all identified anomalies (with the exception of seven anomalies) was conducted in the Pole Line Road Sector during the Phase II EE/CA field investigation (Note: The seven uninvestigated anomalies will be reacquired and investigated during the implementation phase of the subsurface clearance actions that are recommended for specified areas within the East Shore Area).

- Fifty-two OE scrap items were recovered during the EE/CA investigation (based on Phase II EE/CA sector boundaries). Although OE scrap is inert and does not pose a safety hazard, it does indicate a potential for OE in this area (even though there were no OE recovered during the EE/CA field investigation).

- Implementing a clearance action in this area is not warranted because the 100-percent investigation of all identified anomalies (once the 7 remaining anomalies are investigated) eliminated the need for construction support.

7.2 INSTITUTIONAL CONTROLS – EAST SHORE AREA

Because the potential exists for hazardous OE to remain onsite, the development and implementation of land use restrictions as nonphysical mechanisms to limit exposure to OE during planned future land use or development of the East Shore Area are recommended for the entire East Shore Area (See Figure 2 and Table 1).

Hazardous OE was detected during investigation of the East Shore Sector and the Function Test Range Sector within the East Shore Area. Although the majority was on the surface, hazardous OE was found to a maximum depth of 24 inches below ground surface. No hazardous OE was detected during the investigation of the Airfield Sector, the Pole Line Road Sector, or the Off-Site Sector. Non-hazardous OE Scrap was detected in all sectors. Non-hazardous OE scrap was detected to maximum depth of 48 inches below ground surface.

The performance standard of the selected remedy is the removal all OE and OE scrap items from the surface and subsurface to a minimum depth of 12 inches utilizing hand-held geophysical equipment. This type of remedy consists of a survey sweep of the site using a hand-held metal detector, detection of surface and subsurface anomalies, marking (flagging) the anomalies, digging the anomaly, and finally, disposal of the item. This type of survey is commonly called a 'mag and flag' survey. There are limitations and uncertainties associated with this type of remedy such as the detection capabilities of the survey equipment, human factors during operation of the equipment, and completeness of the survey. In order to maximize the effectiveness of the survey Quality Control and Quality Assurance procedures need to be incorporated into the project to: 1) ensure the equipment and operator are able to detect subsurface anomalies at the performance standard, 2) ensure the detection limit is maintained over the entire project area, and 3) ensure the performance standards are met for the duration of the project.

Based on the known presence of hazardous OE identified during the investigation and the uncertainties associated with a mag and flag removal action, the potential exists for hazardous OE to remain onsite. California's hazardous waste property regulations at Title 22 of the California Code of Regulations Section 67391.1, require that for any remedial action or removal action which will not clean the property to unrestricted land use, the DTSC shall not approve or concur with a response action decision document unless the land use limitations or other institutional controls are clearly set forth and defined in the decision document. For federal property, the Department shall not consider property owned by the federal government to be suitable for transfer to nonfederal entities pursuant to 42 United States Code section 9620(h)3-4 where hazardous materials, hazardous wastes or constituents, or hazardous substances remain at the property at levels which are not suitable for unrestricted use of the land, unless an appropriate land use covenant will be executed by the Department and the federal government and recorded in the county where the land is located in accordance with Section 67391.1.

Based on the results of the OE removal action conducted by the Army, DTSC will develop a Land Use Covenant in cooperation with the Army and the Lassen County Local Reuse Authority to, at a minimum, provide disclosure of potential hazards and restrict certain future land uses, such as residential, schools, etc., for the entire site. For areas where hazardous OE is detected, restrict future development and digging without safety plans, construction support, or additional investigation. For areas where no hazardous OE is detected, require safety plans during future development or digging.

8.0 REFERENCES

DTSC, July 2003. Final Remedial Action Plan for Treatment of Investigation Derived Wastes at the Former Honey Lake Demolition Area, Sierra Army Depot.

Earth Tech, March 2004. Draft Final Volume I Engineering Evaluation/Cost Analysis, Former Honey Lake Demolition Range, Sierra Army Depot, Lassen County, California, prepared for U.S. Army Engineering and Support Center, Huntsville.

U.S. Army Corps of Engineers, Mobile District, February 1998. Environmental Assessment for the Disposal and Reuse of the BRAC Parcels at Sierra Army Depot, California.